

AMENDMENTS TO THE CLAIMS:

The following listing of claims replaces all prior listings, and all prior versions, of claims in the application.

Listing of Claims:

Claims 1.-18. (Cancelled)

1  
~~19.~~ (currently amended) A process for recovering ditrimethylolpropane by-produced when producing trimethylolpropane by reacting n-butyraldehyde with formaldehyde in the presence of a basic catalyst, and then separating trimethylolpropane by extraction and distillation, with ditrimethylolpropane being recovered from a ~~still~~ bottom residue of said distillation, said process for recovering ditrimethylolpropane comprising:

- i) adding hydroxylamine salts to said ~~still~~ bottom residue of said distillation;
- ii) subjecting a formal compound contained in said ~~still~~ bottom residue to acid decomposition in the presence of said hydroxylamine salts, at a temperature of 20 to 180°C using at least one of a mineral acid and an organic acid; and
- iii) recovering ditrimethylolpropane from the ~~still~~ bottom residue after said acid decomposition.

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~~20.~~ (currently amended) A process according to Claim ~~19.~~ wherein the ditrimethylolpropane is recovered from acid decomposition products in the ~~still~~ bottom residue after the acid decomposition.

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~~21.~~ (currently amended) A process for recovering ditrimethylolpropane by-produced when producing trimethylolpropane by reacting n-butyraldehyde with formaldehyde in the presence of a basic catalyst, and then separating trimethylolpropane by extraction and distillation, with ditrimethylolpropane being recovered from a ~~still~~ bottom residue of said distillation, said process for recovering ditrimethylolpropane comprising:

- i) removing high-boiling components having a higher boiling point than that of ditrimethylolpropane, by molecular distillation, from said ~~still~~ bottom residue of said distillation for separating trimethylolpropane;
- ii) after said removing high-boiling components, which leaves a remainder of said ~~still~~ bottom residue, subjecting a formal compound contained in the remainder of said ~~still~~ bottom residue to acid decomposition, whereby resulting products of said acid decomposition are formed; and
- iii) recovering dimethylolpropane by subjecting the resulting products of ii) to crystallization using a solvent, after said acid decomposition.

Claim 22. (cancelled).

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~~23.~~ (previously presented) A process according to Claim ~~21~~, wherein the acid decomposition of the formal compound is performed at a temperature of 20 to 180°C using at least one of a mineral acid and an organic acid.

Claim-24. (cancelled)

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25. (currently amended) A process for recovering ditrimethylolpropane by-produced when producing trimethylolpropane by reacting n-butyraldehyde with formaldehyde in the presence of a basic catalyst, and then separating trimethylolpropane by extraction and distillation, with ditrimethylolpropane being recovered from a still bottom residue of said distillation, said process for recovering ditrimethylolpropane comprising:

- i) subjecting said still bottom residue of said distillation for separating trimethylolpropane to crystallization using a solvent;
- ii) after said crystallization, which leaves a remainder of the still bottom residue, subjecting a formal compound contained in the remainder of the still bottom residue to acid decomposition, whereby resulting products of said acid decomposition are formed; and
- iii) recovering ditrimethylolpropane by subjecting the resulting products of ii) to crystallization, after said acid decomposition.

7 6  
26. (previously presented) A process according to Claim 25, wherein the acid decomposition of the formal compound is performed at a temperature of 20 to 180°C using at least one of a mineral acid and an organic acid.

8 7  
27. (previously presented) A process according to Claim 26, wherein the acid decomposition of the formal compound is performed by using an organic acid.

Claim 28. (cancelled)

<sup>9</sup>  
~~29~~. (currently amended) A process for recovering ditrimethylolpropane by-produced when producing trimethylolpropane by reacting n-butyraldehyde with formaldehyde in the presence of a basic catalyst, and then separating trimethylolpropane by extraction and distillation, with ditrimethylolpropane being recovered from a ~~still~~ bottom residue of said distillation, said process for recovering ditrimethylolpropane comprising:

- i) subjecting a formal compound contained in said ~~still~~ bottom residue of said distillation for separating trimethylolpropane to acid decomposition;
- ii) removing high-boiling components having a higher boiling point than that of ditrimethylolpropane, by distillation, from the ~~still-residue~~ product of said acid decomposition; and
- iii) removing ditrimethylolpropane by subjecting resulting products of ii) to distillation for removal of low-boiling components.

<sup>10</sup>  
~~30~~. (previously presented) A process according to Claim <sup>9</sup>~~29~~, comprising the further step of performing crystallization, using a solvent, after the removal of the low-boiling components by distillation, in step iii).

<sup>11</sup>  
~~31~~. (currently amended) A process for recovering ditrimethylolpropane by-produced when producing trimethylolpropane by reacting n-butyraldehyde with formaldehyde in the presence of a basic catalyst, and then separating

trimethylolpropane by extraction and distillation, with ditrimethylolpropane being recovered from a ~~still~~ bottom residue of said distillation, said process for recovering ditrimethylolpropane comprising:

- i) removing high-boiling components having a higher boiling point than that of ditrimethylolpropane, by distillation, from said ~~still~~ bottom residue of said distillation for separating trimethylolpropane;
- ii) after said removing high-boiling components, which leaves a remainder of said ~~still~~ bottom residue, subjecting a formal compound contained in said remainder of said ~~still~~ bottom residue to acid decomposition, wherein at least one compound selected from the group consisting of alcohols and hydroxylamine salts is added to said ~~still~~ bottom residue together with at least one of a mineral acid and an organic acid, for said acid decomposition, whereby resulting products of said acid decomposition are formed; and
- iii) recovering ditrimethylolpropane by subjecting the resulting products of ii) to crystallization using a solvent.

12 (currently amended).

32. A process for recovering ditrimethylolpropane by-produced when producing trimethylolpropane by reacting n-butyraldehyde with formaldehyde in the presence of a basic catalyst, and then separating trimethylolpropane by extraction and distillation, with ditrimethylolpropane being recovered from a ~~still~~ bottom residue of said distillation, said process for recovering ditrimethylolpropane comprising:

- i) subjecting said ~~still~~ bottom residue of the distillation for separating

trimethylolpropane to crystallization using a solvent;

- ii) after said crystallization, which leaves a remainder of said ~~still~~ bottom residue, subjecting a formal compound contained in the remainder of the ~~still~~ bottom residue to acid decomposition, wherein at least one compound selected from the group consisting of alcohols and hydroxylamine salts is added to said ~~still~~ bottom residue together with at least one of a mineral acid and an organic acid, for said acid decomposition, whereby resulting products of said acid decomposition are formed; and
- iii) recovering ditrimethylolpropane by subjecting the resulting products of ii) to crystallization, after said acid decomposition.

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~~23.~~ (currently amended) A process according to Claim ~~21~~, wherein said molecular distillation is performed using a film ~~evaporator~~ molecular still, and wherein said remainder of said bottom residue, after removing high-boiling components using the film molecular still, is condensed product from the top of the film molecular still.